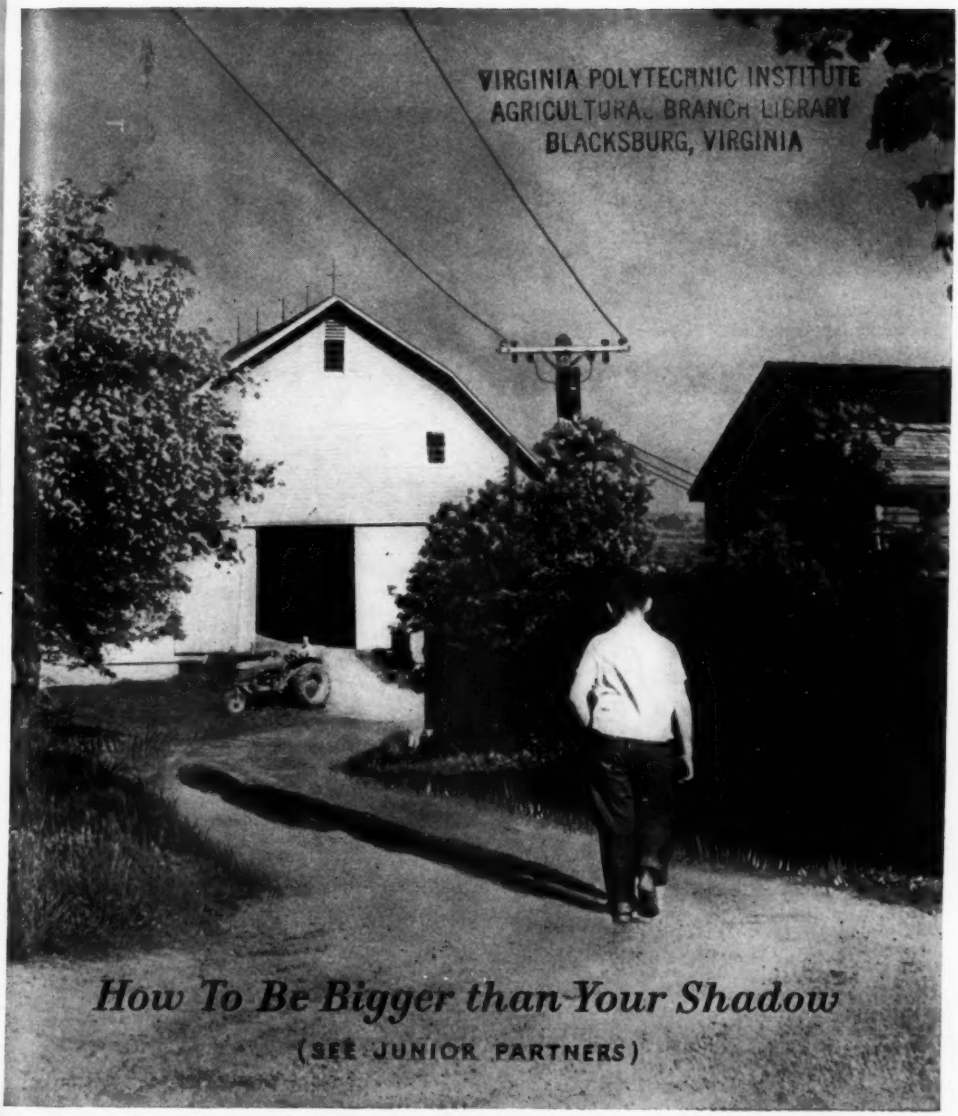
ELECTRICITY ON THE FARM *Magazine*

JUNE-JULY 1952

Farm Electrification Research
Buy Comfort When Buying Sink
Fanned Hens Survive Heatwave
Are Your Motors Under Control
Canning and Freezing Tips . . .

25th Year . . . No. 6



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GENERAL ELECTRIC FarmNews

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TWO-PURPOSE PUMP SAVES FARMERS MONEY!

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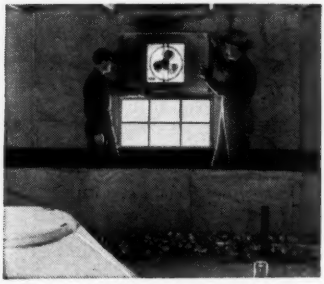
By driving moisture-laden air out of his poultry houses with electric ventilators, Ernest Eicher, Sun Prairie, Wisc., has been able to keep litter dry and control disease germs. The result is reduced chick mortality and more gain per pound of feed. These G-E motor-driven ventilators have fast-acting backdraft dampers and are also suitable for dairy barns and milk houses. For more data, check "Electric Ventilator" in the coupon.



Electric ventilators keep flocks, herds healthy; make buildings last longer.

Unit for either shallow or deep wells enables farmers to economically adapt water system to changes in water supply

R. E. Kline (above left), and his brother Howard, rely on their dual-purpose pump to furnish water for irrigation. Supplemental irrigation (above right) pays off by boosting crop yield and quality.

Available on the market today is a dual-purpose pump that can be easily converted to either shallow or deep well service. Conversion is inexpensive and simply requires changing a few attachments. Thus, if water levels drop or water supply conditions change, this convertibility feature may save the cost of a complete water system replacement.

Requires little maintenance

Since the pump has only one moving part and requires no lubrication, maintenance is kept to a minimum. A typical example of this ability to stay on the job with little upkeep is the performance of a pump on the Kline Brothers' Farm, Ashland, Ohio.

"Our G-E motor-driven pump has had three and one-half years of hard use," says Howard E. Kline, "but we've never had to touch it since it was installed." For more information, check "Convertible Water Pump" in the coupon.

CROP DRIER KEEPS FEED COSTS DOWN, MILK PRODUCTION UP!

Mr. Atherton W. Hobler, owner of Woodacres Farms, Princeton, N. J., and Mr. G. M. Newlin, manager, both agree that their crop drier deserves credit for the green, leafy, pasture-fresh hay they are able to feed during winter months.

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This crop drier, which can also be used for corn or small grains, is equipped with a G-E motor and controls for dependable, automatic operation. For more information, check "Crop Drier" in the coupon.

Crop driers like this prevent musty hay in the mow, moldy corn in the crib.

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Editor's Chat

OUR SILVER ANNIVERSARY

Back in July, 1927 the first issue of ELECTRICITY ON THE FARM Magazine was published. You might ask yourself—why at that early date—because so few farmers were using electric power.

Actually Hi-line service to farmers dates back to around the turn of the century. But farm electrification didn't receive real impetus until around 1923 when the first National Committee on the Relation of Electricity to Agriculture (CREA) was formed. The committee members were made up of representatives of the American Society of Agricultural Engineers; U. S. Departments of Agriculture, Commerce, and Interior; the American Farm Bureau Federation; manufacturers; and electric companies. To supplement the National Committee many state committees were also formed. The land grant colleges have actively supported the state CREA.

The purposes of CREA were to coordinate the activities of all groups interested in farm electrification. It sponsored and encouraged research to develop new farm uses of electricity and to widen the use of existing applications. The year to year work of the CREA was highly sucessful. Various projects revealed immediately that the intelligent use of electric power on the farm could yield a cash return for the farmer and, at the same time, add greatly to the farm family's comfort and convenience.

All of us know how the word gets around when a good thing comes along. Findings of these early committees were no exception.

New uses of electricity on the farm were being developed rapidly. Manufacturers had begun to recognize the need for equipment tailored for the farm. Farmers began to ask more questions and it became clear that the application of electricity to the farm was unlimited. The need for some national means of exchanging information on the use of electrical equipment was apparent. ELECTRICITY ON THE FARM Magazine was started in 1927 to fill this need.

The world population continues to increase, but, at the same time, there has been a steady decline of farm workers. Even so, agricultural production must continue to expand annually to just keep up with the demand. Electricity in the *next* 25 years will be even more essential than in the *past* 25 years.

It will be the function of ELECTRICITY ON THE FARM Magazine to set forth before you the latest developments in the field, telling you of new and proven uses for electric power as well as setting forth data which will aid in securing the most out of electricity.

THE FARM OF THE FUTURE

When I wake up in the morning I roll around in bed,
And press the little button in the wall beside my head;
The vacuum cleaners in the barn begin their daily chores,
Currying the horses and sweeping up the floors;
The automatic milker gets busy on the cows,
While conveyors pass the hay around for bossy's morning browse;
The leghorns' grain is scattered wide to make 'em use their legs,
As the button sets the counter to adding up the eggs;
A click, a whirr, the rotary is plowing through the snow,
Which melts like magic off the steps as the fans begin to blow;
The twenty horsepower saw and ax will uncomplaining chop
The firewood for the kitchen stove until the switch says stop;
Hot water fills the bathtub, and my nose imports the news
The electric stove is glowing, and the good old mocha brews.
I stretch, and feel that zero is not without its charm,
Since dad at last consented to electrify the farm.

E. H. Aberdeen

The preceding poem appeared in our very first issue (July 1927). Some of the phrases have been outdated by progress, especially the last one. It's hard to find a Dad these days that has to be sold on the advantages of electric service. You will agree, however, that it still describes to a large degree "The Farm of the Future" where these and other new developments have yet to be applied.

ELECTRICITY ON THE FARM *Magazine*

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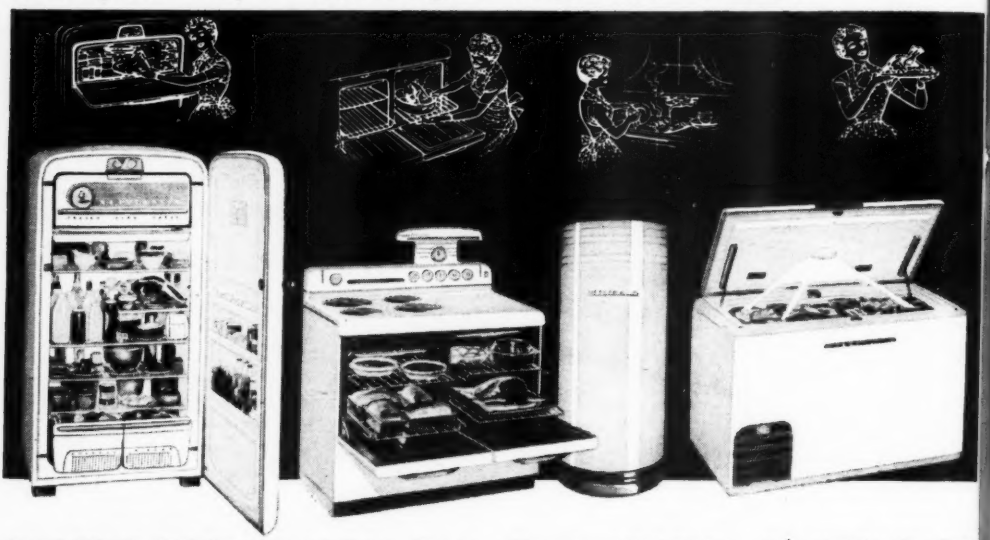
Put yourself in THIS family!

Busy and bustling . . . always getting hungry . . . and sometimes a little grimy, too. It takes modern appliances to keep your family well-fed and clean—a big refrigerator and roomy freezer for storing foods handily . . . an electric range for easier, better cooking . . . and a water heater that keeps hot water flowing at all hours. For these big jobs, you need the most dependable appliances in the land—the Kelvinator line, now on display at your Kelvinator dealer's.



New! "Magic Cycle"* Self-Defrosting Kelvinator. Sensational engineering advancement. Defrosts automatically *without hot electric elements*. Thus frozen foods stay far below freezing even during defrosting. Cold-clear-to-the-floor. Giant "Cold-Seal" Freezer Chest. Handy Door Shelves.

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Farm Electrification Research

Develops New Farm Uses for Electricity

By TRUMAN E. HIENTON†

Research of the State Agricultural Experiment Stations and the U. S. Department of Agriculture is often concerned with possible new applications of electricity on farms. Such research may involve cooperative effort between one or more State Stations and U.S.D.A. Other cooperation may be occasionally provided by equipment manufacturers and local power suppliers. These cooperative efforts tend to make research results quickly available to farmers in the form of new equipment.

Reducing Hand Labor

Reduction of hand labor on farms is of vital concern to farmers and research in this field is yielding important results. Agricultural experiment stations in Illinois, Wisconsin, and Kansas have been working on the development of farm feed-processing equipment to eliminate hand labor as far as possible. Units which will remove ear corn from a crib, supply it to the grinder automatically without overloading the grinder motor and deliver it to the feed wagon or storage bin are a reality. A blender or mixing device which will measure desired amounts of grain and other ingredients into the grinder has also been developed, and eliminates labor of hand mixing or use of a feed mixer. Ten of these grinding and blending units are being installed on Illinois farms during the spring of 1952 for additional observation.

Moving grain, silage, or hay from the bin or mow to feed bunks or mangers by motor-driven conveyor is being studied by the Illinois and Wisconsin Stations. Progress is being made but further developments are necessary to perfect a single device which will supply fixed amounts of all of these feeding materials.

†Dr. Hienton is Head, Division of Farm Electrification, Bureau of Plant Industry, Soils and Agricultural Engineering, U. S. Department of Agriculture, Beltsville, Md.

Labor cost for candling eggs is a major item in egg marketing. The goal of current research at the USDA Agricultural Research Center, Beltsville, Maryland, is the development of an automatic egg candling unit which will reduce or eliminate human labor in candling eggs. While two available units employing radio-frequency have been found unsatisfactory, the wave-length of light which detects blood spots in eggs has been determined. Related light-measuring work is also being done by the California Station.

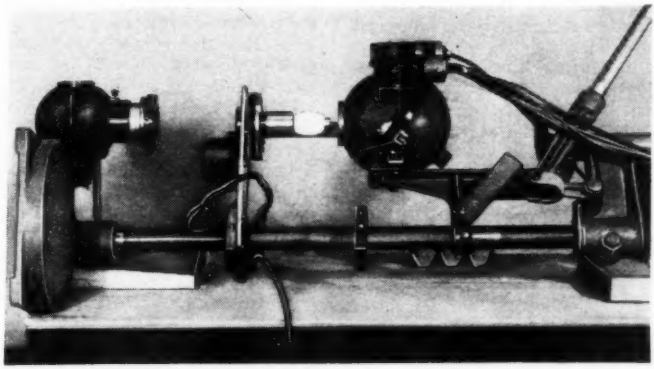
Better Animal Environment

Providing environmental conditions for livestock and poultry within the optimum range determined as desirable by controlled experiments will require the use of electrical equipment in many cases. These environmental conditions include temperature, humidity, visible light and other radiation, as well as temperature of drinking water.

Results recently reported by the California Station and USDA on the effects of cooling fattening beef cattle by spraying them with water showed that for an 80-day period, beginning June 1, 1950, water-sprayed cattle averaged 1.45 pounds daily gain as compared with 1.23 pounds for unsprayed cattle. In studies with dairy cattle at the Missouri Station, the critical temperature for Brown Swiss cows for milk production and feed and water consumption appeared to be 85° F. Thus, future research may be geared to provide ideal conditions for maximum livestock production. Completely air conditioned barns may be required to maintain this environment.

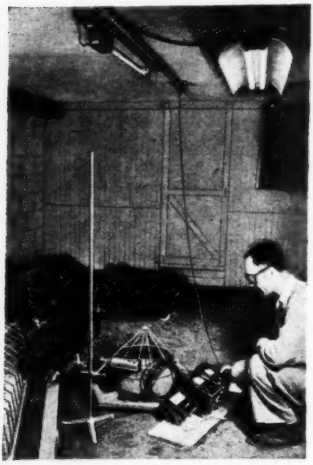
Temperatures of drinking water may be too warm as well as too cold. An increase of 0.4 pound in daily gain of cattle was made by cooling the drinking water from a season-average temperature of 88° F down to 65° during 1950 at the California Imperial Valley Field Station, El Centro. Cooperative feeding trials were initiated by the Iowa Station and USDA in December 1951 to determine the optimum temperature of drinking water for fattening hogs during cold weather when water fountains must be heated to prevent freezing.

Early research at the Purdue University Station revealed that 1.5 more spring-farrowed pigs were saved per litter where a



Experimental unit at Beltsville Research Center for candling eggs.

triangular-shaped hover equipped with a 100-watt lamp was used in the corner of the farrowing pen, than where no heat was used. Of the pig losses which did occur where such hovers were used, 50 percent of those lost in the first ten days died in the first 24 hours. Further recent research cooperative with USDA, on relation of temperatures to chilling of newborn pigs, indicated that auxiliary heat should be supplied in farrowing pens at temperatures below 45° F in addition to that provided in the hover. Such auxiliary heat can well be supplied by one or more infrared lamps or other radiant heaters suspended over the farrowing pen.

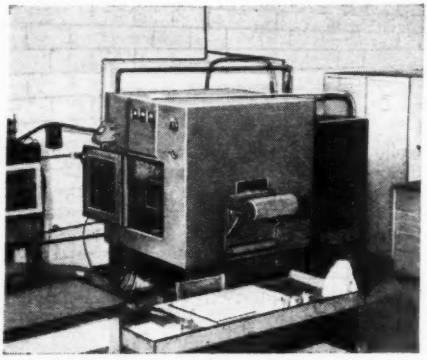


Intensity of Ultraviolet radiation is measured in experiments to determine causes of increased egg production.

Poultry housing requirements are being studied at Beltsville particularly relating to the effects of heat and humidity on egg production. Six tests each with ten laying hens have been recently completed in the two available chambers with controlled environment, with one pair of tests at 55° F, another at about 82°, and a third about 36°. Greatest egg production and eggs averaging the most weight were from 13-month old hens in an environment of 36° temperature and 75 percent relative humidity and from 10-month old hens at 55° temperature and 68 percent relative humidity. The production for both groups was about 0.70 egg daily, averaging approximately 2.0 ounces per egg. Least production and weight was from hens at 83° and 81 percent relative humidity. The production was 0.36 egg daily, averaging 1.4 ounces per egg. At Storrs, Conn., studies are being made to determine the amounts of ammonia which chickens may tolerate to aid in designing ventilating systems, because of many cases of blindness which have developed in that State from excessive ammonia.

Certain effects of light which affect the environmental condition of poultry are well known, particularly that of stimulating egg production during the winter when daylight hours are shortest. A study of the effect of light on early growth of Rhode Island Red chicks by poultry husbandry scientists at the Beltsville Research Center was recently reported. Results showed that chicks grow most rapidly when they eat in 1-hour shifts with intervening 3-hour rest periods. Chicks that were given 1 hour of light, 3 hours of darkness, 1 hour of light and so on during the 24 hours made about 40 percent greater growth during the first 18 days after hatching than did chicks given alternating 12-hour periods of light and darkness. Continuous light produced about a 25-percent increase in growth over that obtained with 12 hours of light and 12 hours of darkness. In another experiment at the Virginia Station, where chicks were brooded for 8 weeks with infrared lamps and light was available from the lamps for night feeding, pullets from such flocks begin to lay 2 to 3 weeks before their sisters older by 1 to 3 weeks, that were brooded with other systems without night lighting. It is not definitely known whether the additional light did produce the earlier maturity.

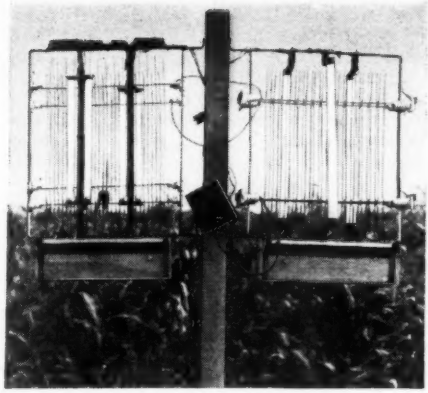
A 5-year investigation on the effect of bactericidal, or ultraviolet radiation on laying hens at Beltsville has shown an increase in the egg production of the irradiated hens over the controls. At the same location the use of bactericidal radiation in a series of five experiments with growing chicks appeared to accelerate growth. Investigations have been recently initiated by the Storrs, Conn. Station with USDA cooperation to determine the effects of radiation from sunlamps on turkey egg production and hatchability.



Radio frequency unit at Louisiana Station in experiments to condition rice and destroy bacteria and insects.

Conditioning Crops

Research in forage drying by forced ventilation received its initial impetus at the Tennessee Station, followed by the Virginia Station, with USDA cooperation, and many others in the United States. Preservation of the feeding value of the first cutting of forage when cured for hay presents a problem in most areas of the United States because of the prevalence of rain at that particular time. The weather hazard has been largely eliminated by the use of forced air driers. In many cases the use of supplementary heat is very desirable for a faster rate of drying and increased capacity. Results of feeding trials completed at Beltsville and published in 1949 have revealed the importance of preserving as much as possible of the yield of nutrients per acre by forced air drying, rapid dehydration, or



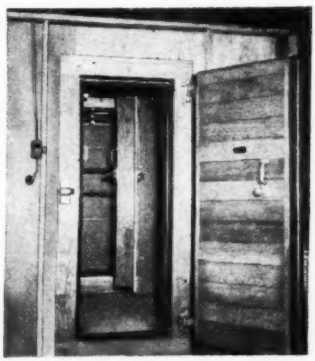
Experimental electric grid insect trap designed for more effective killing by Purdue Station and USDA.

ensiling. A one-year summary of relative milk production per acre of forage (including other feeds) for 1947 showed relative milk production of 100.0 for field-cured hay, 140.3 for silage, 148.2 for barn-cured hay, and 149.6 for dehydrated hay. A two-year summary (1947-48) of potential milk production per acre omitted field-cured hay, but included silage as 100.0 dehydrated hay as 104.8 and barn-cured hay as 105.4.

Research on the drying or conditioning of farm commodities with radio-frequency energy is now being conducted at the California, Idaho, Louisiana, and Nebraska Stations, the latter two cooperatively with USDA. The work at the first two has been primarily concerned with rice, while that at Nebraska has been with corn, wheat, and alfalfa, and that at Idaho with vegetable seeds. This work has been largely of an exploratory nature because of the internal application of the heat and the necessity for accurate determination of the physical and chemical effects on the material treated. Very rapid drying occurs with this method but cost is greater than by other methods because of cost of equipment and its operation. Future possibilities for such equipment becoming practical for farm application depend upon its accomplishing other purposes than drying alone, such as destruction of insects which may infest the material.

Insect Control

Research on the possibilities of attracting insects with lamps and capturing or destroying them by suitable traps has received increased attention in very recent years. Work at the Purdue University Station reported in 1950 on attractiveness of different lamps to the European corn borer moth indicated that a lamp radiating energy in the near ultraviolet or black-light region was the most attractive. Other adult insects (moths) of economic importance were attracted to this lamp, including the tomato and tobacco hornworms and the corn ear worm, which is also known as the tomato fruit worm, or cotton boll worm. Investigations were conducted in 1951 by USDA with the Purdue University and Iowa Stations on the corn borer, in North Carolina on the tomato and tobacco hornworms, and with the Georgia Coastal Plain and Texas Stations on the corn ear worm. The adult moths of these insect pests were attracted to the black-light lamps in many cases in considerable numbers but because of differences in size and habits of flight were not captured with equal success by the various types of traps. At the present time none are being recommended as a means of control for any of the insects listed. But their use as a moth emergence indicator has proven accurate.



Above: Exterior view of two-temperature farm refrigerator developed by Texas Station and USDA. **Right:** Freezing compartment of two-temperature farm refrigerator developed by Texas Station and USDA.

Refrigeration and Processing

Just as research may develop electrical devices which are needed to provide the proper environment for animals and their food or water, so does research develop the electrical devices for providing the proper environment for the human and his food and water. The heat pump, or reverse-cycle refrigeration for heating, is one of the devices which research is developing to help the human keep warm in winter and cool in summer. Research, cooperative most often with manufacturers or power suppliers has been or is being carried on at a number of State Engineering Experiment Stations, including those in Florida, Kentucky, Connecticut, Texas, and Kansas. At the latter, both Agricultural and Engineering Experiment Stations are cooperating with USDA on basic studies of heat transfer in soils to obtain data for design of a coil to absorb heat from or to dissipate it in the soil. Performance data are being obtained on heat pumps installed in several farmhouses. Operation costs which have been reported from tests with six heat pumps in Kansas homes compare favorably with the cost of heating with fuel oil or liquid petroleum

gas. These heat pumps used ground water as a heat source. Other units are available which use air as the source of heat.

Possible New Applications

There are other fields in which exploratory research has given some evidence of possible new farm applications for electricity.

Seed treatment with radio-frequency energy and ultrasonics has shown some increase in viability. Such treatment, if found successful, would reduce the amount expended for high priced seeds and insure more uniform crop stands. Another possibility is the development of entirely new varieties which may occur as a result of such treatment.

Pasteurization of milk, eggs, and other produce may be accomplished by ultrasonics, radio-frequency energy atomic radiation or electron bombardment. We commonly associate pasteurization with heating effects but there may be electrical effects which will kill bacteria and other organisms. Water purification presents problems on many farms but another device which utilizes ultraviolet lamps may eventually be found practical for this purpose.

Insect destruction may be accomplished by any of the four methods previously mentioned for pasteurization.

Fanned Hens Survive Heatwave

Summer Ventilation Insures Flock Profits

By J. H. BODWELL†

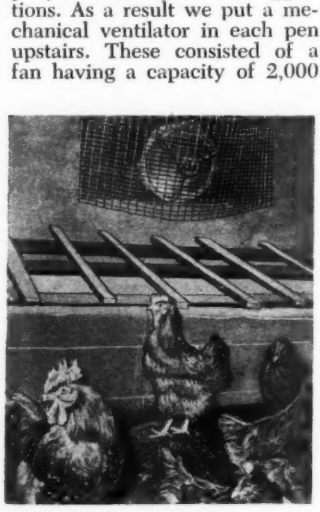
"It is a must for me," said Frank Lane in discussing summer poultry house ventilation. "It must also be mechanical ventilation to be adequate for my conditions. Now let me tell you why," says Frank.

"To begin with, I have been working with poultrymen or handling poultry myself for the last 35 years. I think I have seen all kinds of methods of ventilating. Some work fairly well, but each person has to figure on his own conditions and govern himself accordingly. For my part, I have a two-story poultry house built into a bank and one side of the lower floor is directly in the bank. We have four pens of 500 birds each.

"Two summers ago, I noticed some of the birds were getting what looked like a purple comb and I immediately thought of Blue Comb disease. Then I noticed that the birds which stayed on the roost in the daytime were the ones most affected. That was the hottest part of the building! You see, one side slopes just half as much as the other side and the upper pens have the roosts directly under the lowest studded part of the roof. Naturally, there is less air there than in any other part of the building.

"Well, during one particularly hot spell last year I lost a great many birds because of the heat. Because my worst trouble was in the upper story, I decided that the roof should be insulated. I did this and thought that I had my problem licked. But the next hot spell I was in trouble again. Although the temperature in the pens was not as high as it would have been if I had not insulated the roof, it was bad enough to require attention. Up to then I had natural, not mechanical, ventilation.

"I checked with the rural department of my electric company and obtained their suggestions. As a result we put a mechanical ventilator in each pen upstairs. These consisted of a fan having a capacity of 2,000 cu. ft. of air a minute. The installation took place on the worst day of the hot spell and the birds were immediately relieved. Since then we have tried placing the fans in different positions. We have tried using ducts for inlets and also a duct over the exhaust fan. However, we've found that best results were obtained and the greatest flow of air secured by placing the fan in the center directly over the roosts. The open windows on the opposite side of the pens act as inlets.



Each pen has a 2,000 C.F.M. fan above the roost as shown here.

"We thought at first the birds might have colds, as the air came directly from the windows and across the birds as they roost at night. However, no trouble has resulted from this direct draft. The fans are used 24 hours a day in the hottest part of the season and only as needed at other times. We have now used them for two seasons and know that we must have them under our conditions in order to realize a profit from summer laying.

"The total cost of operating these fans per month did not cost as much as two birds that would die because of the tremendous heat. Our mortality since installing the fans has been no higher than in any normal season. Before installing them we had lost as many as 15 birds in one night when the temperature became unbearable."

†Mr. Bodwell is Director of Rural Service, New Hampshire Electric Co., Portsmouth, N. H.

Are Your Motors Under Control?

They Can and Should Be, Here's How

It is not uncommon to find ten to fifteen electric motors on any one farm. Many have considerably more than that. And you won't find any of these motors without some type of control. Let's see what different types of control can be used and under what conditions they are applied.

The primary purpose of a motor control is to provide a means to connect and disconnect the motor from the electrical supply

The simplest form of motor control is a cord plug. With it you can start or stop a small motor.

line. All types of control do this. There are other features that are desirable in controlling a motor driven operation. You have a choice of local, remote (controlling from several locations), or automatic control.

Besides just connecting and disconnecting the motor from the line, the control should also provide overload protection for the motor if it is not provided in the motor itself.

Many small fractional horsepower motors, which are part of our household appliances, have no control other than the plug on the extension cord. Experience has shown that the need for connecting them to the line is irregular and infrequent. Equipment such as your electric refrigerator has the motor built in They are generally automatically operated. Protection for the motor has been incorporated in the unit by the manufacturer, as a general rule. Connecting these household devices to the line is no more of a problem than turning on a switch or connecting a plug to an electrical outlet and little thought or attention has to be given to controlling or protecting these motors.

Where motor control is of particular importance is where an individual motor is adapted to a machine. In these cases the motor would be purchased separately. And too it may be desired to motorize a machine that has formerly been operated by some other form of power. It is with productive equipment and operations where the proper control really pays off by saving time and energy. It increases production and reduces costs by helping you make more efficient use of your time. Motor overload protection is cheap and sound insurance against loss of pro-

A snap action switch is better than the cord plug. Its quick make or break reduces arcing thereby making contacts last longer.

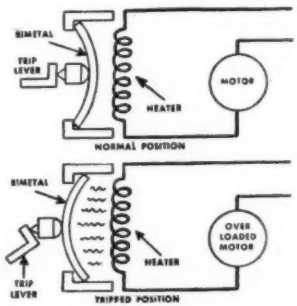
duction due to a motor failure. Very often the time lost in replacing a motor or a loss in production is more serious than just the loss of the motor itself.

An electric motor is a willing servant and will try to carry any load that is imposed upon it. If this load is increased, the motor will still try to handle it, taking extra power from the power supply line. This extra power causes excessive heating of the motor. If the overload is great enough or prolonged enough, the temperature of the motor may reach a point where the winding insulation is destroyed and the motor is "burned out". The function of motor overload protection is to disconnect the motor from the supply line before its temperature approaches a dangerous value, caused either by excessive load, low voltage or a stalled condition.

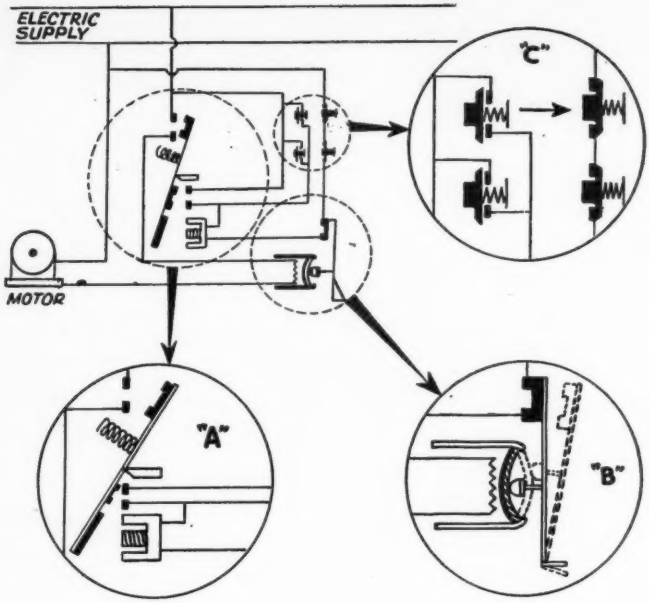
There are different ways in which a motor may be protected against dangerous overloads or excessive heating.

The overload protection may be built into the motor. If so, it will generally be indicated on the motor nameplate or by a special label. Overload protection of this type can be had in motors from fractional horsepower sizes up through two HP. However, they have to be ordered as such. There are two types of overload protection, manual reset and automatic reset. The manual reset type is recommended where an operator generally tends the machine. The operator has to reset by pressing on the reset button. In this way, the operator is protected against any possible injury done by an unexpected restarting of the motor. For automatic operations such as with refrigerators, water systems, compressors and milk coolers, where the operation is controlled by an automatic device such as a pressure switch, thermostat, or time switch, it would be desirable to have the motor start automatically. For this service, automatic reset is used.

Motor overload protection can also be provided in the control. All motors that are not equipped with built in overload protection should have it provided in the control or in the motor circuit.



This is the way in which an overload protection device, in a switch, operates. Normal current is passed by the heater. If excessive current is drawn, the heater gets warm causing bimetallic plate to change position. This moves trip lever into off position.

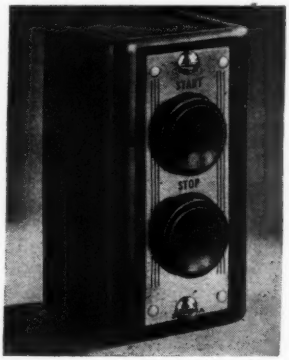


The "workings" of a magnetic switch (A) with overload protection (B) and push-button start-and-stop stations (C). At "A" the magnetic switch is open. It is pivoted like a see-saw. There is a coiled spring which holds the see-saw open. The contacts which need to be closed to start the motor are at the top of the see-saw. At the opposite end is an electro magnet. If current is applied to the electro magnet, it will pull the see-saw to itself and hold it there. That closes the contacts at top of see-saw and starts motor running. It also closes the contacts, shown just above the magnet, to keep current flowing through the magnet. As long as current is running through the magnet the switch will stay closed. However, just as soon as the current is shut off, the magnet loses its power and the spring pushes the see-saw open again.

At "B" is the overload protection device. If excessive current warms the heater the bimetallic part expands and kicks open the circuit to the electro magnet. The open position is indicated by the dotted lines.

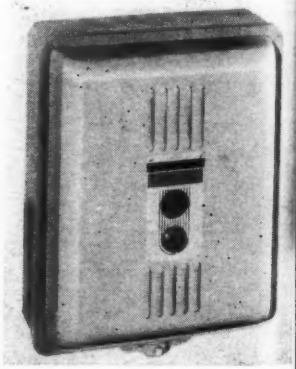
"C" shows the push button stations, the ones on the right (normally closed as shown are the stop buttons. Those on the left (normally open as shown) are the start buttons. The arrow indicates direction in which push buttons travel. Thus if a start button is pushed it *closes* a circuit feeding current to the electro magnet. Of course, when the magnetic switch is closed, the circuit to the magnet is completed. This holds the switch in closed position even though the push button is released. When one of the stop buttons is pushed it *opens* the circuit feeding current to the electro magnet and the spring in the magnetic switch pushes the see-saw open.

All motor overload protection devices are the thermal type where a predetermined amount of temperature rise will cause it to operate and open the motor circuit. Where the overload protection device is built into the motor, it is matched to that particular motor's characteristics. If, however, it is provided in the control or in the motor circuit the rating has to be matched to the size of the motor. This is done by selecting the right type of relay heater according to the nameplate current rating of the motor. After the proper selection has been made no subsequent replacements are necessary as long as that particular piece of control is used with the same motor. If, however, the control is used to operate two or more different size motors the overload relay heater will need to be checked and its rating selected according to the motor being used.



Overload protection for a motor can also be supplied in the motor circuits separate from the control itself. This generally consists of a delayed action type fuse or a circuit breaker. These two devices in the motor circuit are primarily used to protect the motor against an overload and should not be confused with devices used to protect the electrical circuit.

The delayed action type of fuse differs from the regular fuse in that one end of the fuse wire is contained in a small pot of solder. A coil around the solder cup carries the entire current used by the motor. If the current flow is excessive the solder melts. A spring inside the fuse pulls the fuse wire from the solder and thus opens the circuit. This type of fuse will permit the flow of relatively large motor starting currents without melting. The reason for this is that the high starting current of a motor is of a very short duration. During this time the solder has not had sufficient time to reach the melt



Above: Exterior view of a typical magnetic motor starter switch. **Left:** Exterior view of a typical start-stop switch.

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JUST TURN THE TAP . . . hot water flows instantly for every milkhouse or family need. No flues, flames, fumes or vapors. Can be installed anywhere, to save long pipe runs. No waiting, no muss, fuss or bother. Just install it and forget it. And best of all, you get Certified Protection for 10 years against tank failure, plus standard Westinghouse Guarantee covering all other parts of the heater.

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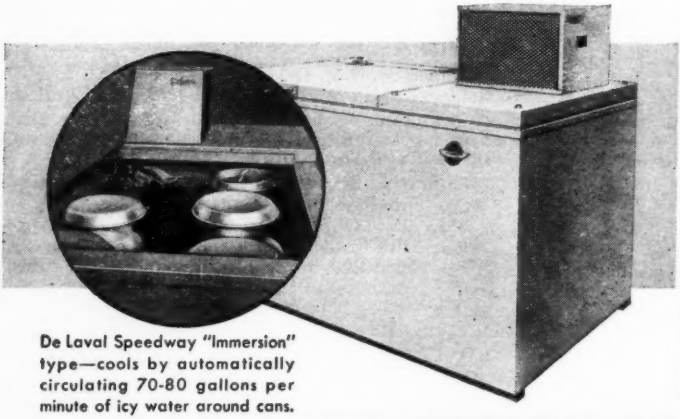

De Laval Speedway "Immersion" type—cools by automatically circulating 70-80 gallons per minute of icy water around cans.

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ing point. As soon as the motor comes up to speed the motor current drops down to normal values within the rating of the delayed action fuse. If, however, during the operation of the mo-

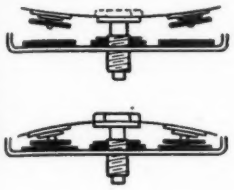
This is a cutaway drawing of a time-lag fuse. It will pass moderate overloads for short intervals. If an overload persists long enough to melt the little pot of solder, the spring will remove the contact thus breaking the circuit. Of course, for a very heavy overload, such as a short circuit the upper fuse link will immediately blow.

tor a prolonged overload condition of the motor persists so that the current is of sufficient value to melt the solder, the delayed action fuse will "blow". After one of these fuses has "blown" it has to be replaced before the motor can be restarted.

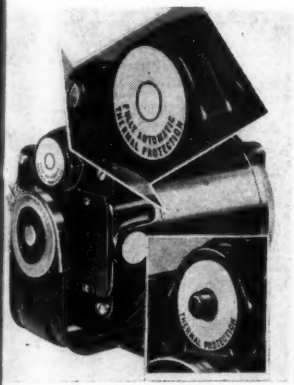
A thermal element circuit breaker in a motor circuit operates in a similar manner to a delayed action fuse except that the pot is replaced by a bi-metal thermal element. An excessive motor current causes the heating of this thermal element which makes it move in its position. The movement of this thermal element trips a switching mechanism and opens the motor circuit. After it has cooled down this thermal element returns to its normal position and the switching device can be reset. No replacements are necessary.

Proper control of a motor includes more than simply protecting it from overload. It should be able to open and close the circuits to a motor safely without excessive arcing. The opening and closing of an electric circuit such as would be required on a 5 HP motor, requires contacts of special design so that the electric arc will not destroy the contacts. This is the first problem that control is required to do namely, open and close the circuit and do it safely and without damage. An ordinary switch will open and close the circuit but it will not continue to do so because the contacts will be burned and ulti-

mately the heat and arcing that results will destroy the contacts. Another important function of a motor control is that it can be



Here's the way the thermal overload protector for a motor works. When the motor is running normally, the unit is closed as in the bottom drawing. If too much heat is produced in the motor, either by an overload or by improper ventilation, the bimetallic member expands opening the circuit.



Typical applications of thermal overload protectors for motors. These units protect the motor from overloads as well as other heating. Automatic reset model is shown at top. The hand reset is shown at bottom.

operated from several locations or can be made automatic. Hay drying fans located on the mow floor can be operated from the pushbutton placed in any convenient location. This is done by opening and closing the magnetic circuit of the control. If automatic operation is desired, then the pushbutton can be replaced by any device which will open and close the magnetic circuit. Wherever a magnetic switch is used its magnetic circuit can be operated by a pressure, float switch, or a time

. . . . . (More on page 33)

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This Milk Cooler Now Pays The Electric Bill

It Paid for Itself in First Year of Operation

By BYRON L. TROYER

Max Brubaker, R.R. 2, La Fontaine, Ind., (Wabash County), gets all the power and lights to operate his 26-cow dairy barn for free! The use of electricity saves him and his hand many hours of labor, makes work easier, improves the quality of his Grade A milk—all without a cent of cash outlay for current!

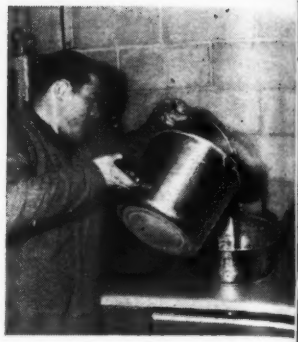
In fact, without counting any of its advantages, the meter on his cow barn pays monthly cash dividends.

Brubaker uses from 1,200 to 1,400 kwhrs. of electricity monthly at the dairy barn. His herd of two-year-old cows produces 22,000 pounds of milk per month. The dairy in Kokomo, Ind., which buys his Grade A product pays a bonus of 15 cents per cwt. because he uses an electric milk cooler.

The $33 per month bonus more than pays the actual cost of the current, Brubaker says. Then, he has the use of a two-unit electric milker, a heater with fan in the cooler room, electric clippers and a 30-gallon electric water heater—all for free, too. Besides, the bonus pays for the use of a three-horsepower motor which operates the unique unloader which puts the ensilage in his silo and the corn in his crib.

It pays also for the current that runs a three-quarter horsepower motor on the cylinder corn sheller.

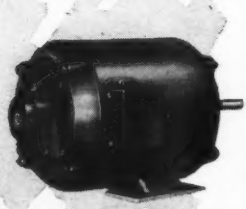
Figuring it another way, Brubaker says that the eight-can side-opening cooler more than paid for its own initial cost in the first year of operation. That is, the bonus payments totaled more than the cooler cost.



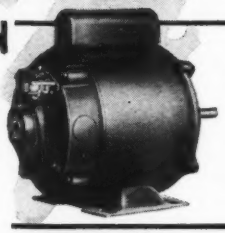
Max Brubaker of La Fontaine, Indiana, pours milk directly into cans in his side opening milk cooler. He likes the side opening cooler since it is not necessary to lift the cans. Its ice bank and water spray enable him to get the premium which more than pays for all the power cost of his completely electrified dairy barn each month.

His father, Otis O. Brubaker, was president of the Producers

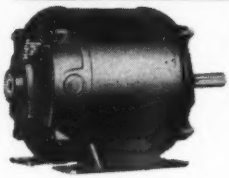
Century Electric Motor Power



Type RS—Repulsion start, induction, brush lifting single phase motor—where you want high starting torque and low starting current. 1/2 to 20 horsepower.



Type CSH—Capacitor start, induction, single phase motor—provides high starting torque with normal starting current. 1/8 to 20 horsepower.



Type SP—Split phase induction, single phase motor. 1/8, 1/6, 1/4 and 1/3 horsepower.

Century motor powered equipment can take the drudgery out of many farm jobs. You can save time and energy—and usually get the job done better.

Use Century motor powered equipment to keep water on tap in the house, barn, and feed lot—to pump milk, shell grain, grind feed, sharpen tools, operate hay and grain dryers, and to take the hard work out of dozens of other farm jobs.

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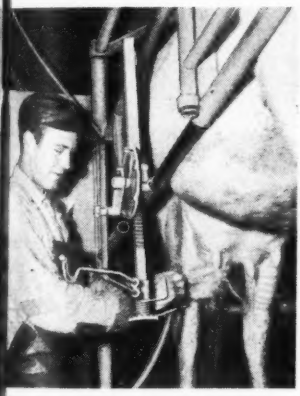
Creamery, a large butter-making firm, for 20-odd years. Although they farmed, "We never had a decent place to milk during all that time, although we kept three or four dairy cows," Max relates.

This wasn't because the Brubakers weren't modern. The drawback was that the place was rented. Four years ago, the family bought the farm.

Max was farming it by then. He tried feeding beef cattle, along with hogs, for two years. The gamble of feeding cattle made the regular milk check look like a surer bet. They kept the hogs, but converted from beef to dairying. A lot of 26 Holstein heifers from four to six weeks old was purchased in Wisconsin.

While the heifers were growing to producing age, the large barn was converted for dairying. A five-cow milking parlor was



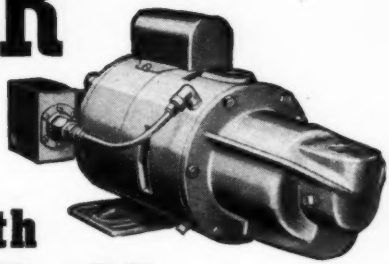
Spraying the udder with water mixed at 120 degrees is standard practice on the Brubaker farm. The hot water, piped from the electric heater tank, stimulates milk flow. Combined with hand massage, it shortens the milking operation by several minutes.

installed and a spic and span cooling room added.

Use of the latest electrical equipment and strict attention to sanitation have enabled Max to obtain extremely low bacterial counts in the milk produced. Several counts below 3,000 b.c. per milligram have been reached, even in hot weather. Indiana regulations permit up to 220,000 b.c.

The dairyman gives most of

WATER



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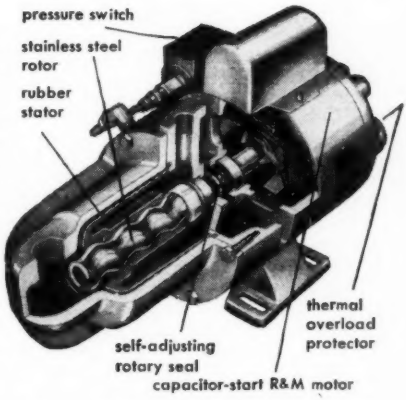
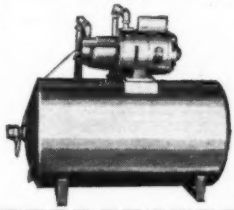
For only a few cents a day, you can have running water on your farm or suburban home. This new R&M Shallow Well Pump is self-priming, quiet, needs no oiling, is safe, has positive automatic controls, gives long, trouble-free service. Look at some of the features!



Famous R&M motor is slow-speed (1750 RPM), powerful, capacitor-start type. Sealed ball bearings, lubricated for life. Water lubricates pumping element and rotary seal.



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See this new, deep-pulling, fast-pumping Rapidayton "Axial-Flow" Pump at your dealer's. It pumps water like *magic* — delivers up to 2500 gallons of water per hour — does up to 20% more work with the same horsepower. "Axial-Flow" makes this big performance difference. Water flows smoothly through the pump because there's less friction. Impellers are micro-smooth—pump cases and diffusers are "precision-formed" instead of cast—internal parts are of bronze or stainless steel. Deep well units with jet assemblies are available with 1, 2 or 3 stages—shallow well units with 2 or 3 stages. The more stages—the more work the pump will do. Send coupon for complete information.

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the credit for this to the milk cooler and the 30-gallon heater. He believes the side-opening cooler with its bank of ice on which the cans rest and constant spray of cold water falling on the cans gives the fastest cooling. Since the cans are in the cooler constantly and each bucket of milk is taken directly from the cow and poured into the already-cold can, there is no wait between the time the milker is removed from the cow until the milk starts cooling.

The 30-gallon hot water heater is controlled by thermostat and provides a constant supply of 150-degree hot water. A cold water pipe and valves in the cooler room permit Brubaker to mix the water for the desired temperatures. The hotter temperature is used for washing buckets and utensils. A pipe carries water mixed to a 120-degree temperature into the milking parlor. There, a hose and nozzle allow the use of the hot water to wash the udders of the cows in the stalls.

The temperature, which is as hot as a man's hand can stand without discomfort, helps promote milk flow as well as cleaning the udder and teats. Brubaker says the total milking time is reduced several minutes each day through its use. Hand massaging of the udder while the washing is being done helps speed the milk flow. A double unit milker cuts milking time in half. The milking is done under fluorescent lights. Light is more even and current costs less, Brubaker finds.

One of the most appreciated electrical devices in the dairy is a sturdy room-heater type of heater with fan. This is suspended from the ceiling of the cooler room with two heavy chains, keeping it from underfoot. Brubaker never has the old nuisance of thawing out and repairing frozen pipes anymore. The heater thermostat is kept at a constant temperature of 40 degrees except for the time the cooling room is being used. It is moved up to 50 then to provide a more comfortable working temperature. At the low temperatures, operation cost is slight.

The use of a 1½ hp electric motor and the rear end of an automobile chassis practically provide the services of another farm hand. Using the rear axle, transmission and wheels of the car, a shaft was added at the front. This, including two universal joints, fits into a large iron pipe on the rear of the wagon being unloaded. The turning pipe, equipped with two cables running to a false front on the wagon bed, drags the load off and into the conveyor which elevates the chopped hay, ensilage or grain as it is unloaded.

The automobile gearshift provides three forward speeds to regulate the speed of unloading. An old auto wheel rim provides the belt-driven pulley which transmits the power from the motor.

The 3 hp electric motor runs the cylinder corn sheller which shells corn for the calf and for ground feed nearly as fast as a man can shovel into the sheller. Brubaker maintains light connections on the outside of the dairy barn, crib and other buildings. When the unloader is used, the lights are replaced by female plugs to permit plugging in the motor cord.

A 30-gallon electric heater, thermostatically-controlled, provides constant hot water. This Hoosier dairyman has two lines so that hot and cold water can be mixed at the metal sink for the proper temperature for cleaning buckets and milker equipment.

Although his current is "free," Brubaker says he wouldn't be without any of his dairy barn electrical conveniences.

A friend of ours, who is a taxi-driver, told us confidentially, "It's NOT just the WORK I enjoy, but the people I BUMP into." . . . . NEXT to being shot at and MISSED, there's NOTHING quite as satisfying as an INCOME TAX REFUND . . . . LOADED DICE: POISON IVORY . . . . BARBED WIRE: TELEGRAM full of INSULTS . . . . From the HUDSON NEWSLETTER—REPUBLICANS: Anti-HST-men . . . . JINGLEJOLLY DEPT.: "ALPHABETICAL STUPE"—"O, MLE, what XTC I ALWAYS feel when UIC. I USED to rave of LN's eyes, For LC I gave countless sighs —For KT, too, and LNR I was a keen competitor—NOW each one's a nonNTT, For UXL them all, UC." (Author unknown) . . . . Then there was the absent-minded professor who kissed the door goodbye and slammed his wife as he went out . . . . OVERHEARD: "I was REAL big-hearted this morning. I gave a BUM a DOLLAR." "And WHAT did your HUSBAND say?" "THANKS." . . . . Fellow we've known for a long time, Patrick O'Reilly by name, invited us to attend his wedding anniversary, an event to take place on the south side of Chicago. He gave us the address, then continued, "We're on the third floor, Apartment B. Just push the bell with your elbow." "And WHY," we queried, "would we be using our elbow?" "Good Hivvins, man," replied Pat, "yer NOT comin' EMPTY-HANDED are yez?" . . . . BARGAIN SALE: where a gal RUINS one dress to buy ANOTHER . . . . KNOWLEDGE: information acquired by SOME people for the sake of KNOWING it, and by OTHERS for the sake of TELLING it . . . . TOO many POLITICIANS can't STAND on their own records—so, they JUMP on their OPPONENT'S . . . . OVERHEARD—on the Crosstown Bus—"Aw, SHE'S so dumb she thinks FOOTNOTES come from SHOEHORNS." . . . . SNICKER-SNORT-OF-THE-MONTH: "GOODNESS, this parachute-jumping REALLY looks dangerous to me," gushed the sweet young thing to the much-decorated aviator. "You MUST have had some TERRIFYING experiences." "Yes," agreed the aviator, "I HAVE had some really TERRIBLE ones. Why, ONE time I EVEN came down on a lawn where there was a 'KEEP OFF THE GRASS' sign!" . . . .

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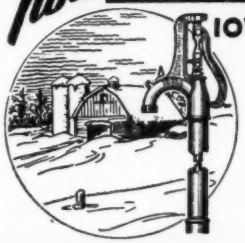

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Electrical Housekeeping

Edited by NAN SHAW, 329 Memorial Union, Ames, Iowa

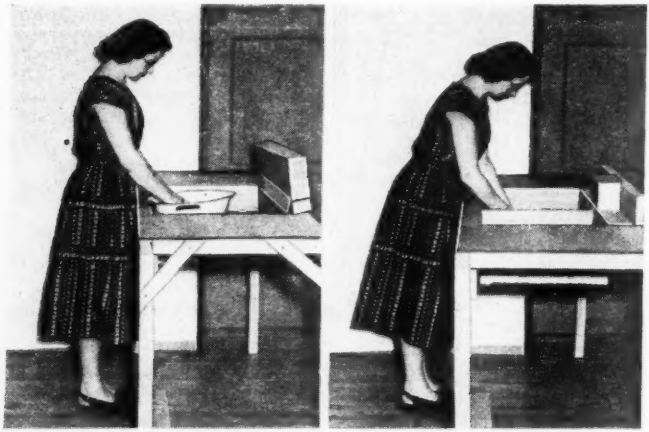
Buy Comfort When Buying Sink

Sink Style Determines Height and Height Determines Comfort with which Sink May Be Used

By MERNA MONROE†

Putting in a kitchen sink? Then you are trying to decide just what kind of sink yours will be. Will it be a double or a single sink, with or without drainboards? The convenience of each of the several styles of sinks depends upon what you use the sink for. Is the sink bowl the right length, width, and depth for your purposes? Is the drainboard long enough? When space is limited, you have to decide whether to do without a drainboard in order to have enough bowl space or whether to manage with less bowl space in order to have a drainboard. Regardless of the style of sink you select, you want it to be a comfortable one.

Here are some ideas that may help you. They are compiled from a recent research study done at the University of Maine, Augusta.



Cardboard sinks were used to check sink height differences. Notice how much less the worker is bent over at the left-hand sink. This is 6 inches deep and has a 1½-inch rim; the one at right is 8 inches deep and has a 3-inch rim.

Comfortable Height

You will be uncomfortable and will tire quickly if you have to hold any part of your body in an unnatural position while you work at your sink. On the other hand, you can work comfortably for a long time if you stand straight and let your arms hang down naturally.

Most of you can wash dishes comfortably if the bottom of the sink is about 32 inches from the floor. This prediction is based on the preferences of 562 women in Oregon and Washington when they sought the most comfortable table height for washing dishes in a dishpan, and on the preferences of 102 Farm and Home Week visitors at the University of Maine when they tested 6-inch and 8-inch-deep cardboard sinks, with the rims installed 36 and 38 inches from the floor.

Inasmuch as sink depths run from 6 to 8 inches, it's seldom possible to have the sink rim flush with other kitchen work surfaces. If you insist on flush surfaces, you will probably wind up with the sink bottom 28 to 30 inches above the floor. However, there is no valid reason for requiring the sink and work surfaces to be flush.

If you are quite tall, you could have the sink rim and adjacent work counters 37 or 38 inches from the floor; then the bottom of a 7½-inch-deep bowl would be 29½ to 30½ inches from the floor. If you are of medium height, you may find that your arms get tired when you work with bowls or pans on counters that are more than 36 inches high. If you want the sink rim 38 inches from the floor, you could install a 3-foot-long counter this high and at the side of the sink where you put the dirty dishes. With the exception of the mixing center, the rest of the counters could be the same height as your stove. Those of you who have a short reach will not want the sink rim any higher than 36 inches; you can put a rack in the bowl to raise your dishpan to a more comfortable working height.

A narrow sink rim, 1 or 1½

†Miss Monroe is Assistant Home Economist, Maine Agricultural Experiment Station, Orono, Maine.

inches, is more comfortable than a wider one. The front of the bowl in a countersunk sink is usually 3 inches or more from the edge of the work counter. The bowl in some of the cabinet sinks begins 3 inches from the front. Unless you have long arms, you will be conscious of muscle strain while you reach over the wide space to get at your work at the bottom of the bowl.

How to Test a Sink for Comfort

Stand straight, do not lean over, while you put both of your hands in the sink. If you can lay the palms of both hands on the bottom of the sink while you stand straight, then you could work without bending over. If only your finger tips touch the bottom while you stand straight, you will have to bend over considerably when you work.

Convenient Sinks

The new designs in sinks give you a choice of the following: (1) a short single bowl with two, one, or no drainboards, (2) a short single bowl and a laundry tub with a removable drainboard over the tub, (3) two short bowls with two or with no drainboards. The old-style, 30-inch-long, single sink is made by a few manufacturers.

Which of these will be the most convenient for you? Do you want to wash the dishes in the sink bowl or in a dishpan? How do you like to rinse your dishes? What other kinds of work do you do at the sink? Do you need a large bowl for these other kinds of work? Work habits determine the best sink for you.

You can hunt for a sink which allows you to continue with your present methods of washing and rinsing dishes, or you can change your methods to fit the facilities of the sink.

If you wash in the sink bowl. You need a sink around 7 inches deep to prevent water splashing onto the floor. This is important if you would like to save energy. One advantage to washing in the sink is that you put in a bigger load of dirty dishes and let some of them soak while you wash the others. An objection to washing in the bowl of the short single sink is that you have no place to rinse away the coffee grounds or particles of food clinging to dishes or cooking utensils. You will have the same difficulty at the combination sink-laundry tub if you keep the drainboard over the tub. At a double sink you can rinse forgotten dishes or dump soaking

Left: The homemaker is nearly erect while washing dishes at this sink. It has a long single flat rim bowl that is 5½ inches deep. There's ample room for both the dish drainer and the dish pan too. The sink rim rests on top of the work counter. **Right:** This double bowl sink is 8 inches deep. The flat rim is flush with the work counter surface. Note that the homemaker must bend over more to do the dishes.

Left: The deep bowl of a combination sink-laundry tub requires too great a bend for comfortable working. **Above:** A wooden rack, placed in the tub, will hold the dish drainer at a more convenient height.

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water into the other bowl, provided your drainer holds the rims of the dishes well above the bottom of the sink.

If you wash in a dishpan at the sink. Since you can use a 6-inch-deep sink instead of a deeper one, you will have a more comfortable working height.

You need a bowl wide enough from front to back to hold the dishpan. Any of the moderate-size dishpans will fit in the bowl of the short single sink and of the larger combination sink-laundry tub. At the old-fashioned, long single sink you need a round dishpan so that there will be room in the bowl for the drainer.

If you rinse dishes after you stack them in a drainer. Decide whether you want to put the drainer in the sink bowl or on a drainboard. If you put it in the sink, you can give each dish a good rinsing without worrying about water splashing onto the floor. To get sink-bowl space for a drainer, you should choose a double sink or the long single sink. You can get extra bowl space at a combination sink-laundry tub if you put a rack, 6 to 8 inches high, in the tub and set the drainer on it.

If you buy a sink with one drainboard and if you work from right to left, you will want that drainboard at the left of the bowl.

If you want to use the drainboard as a work counter, look for one which has rounded, shallow grooves so that cups or glasses will not tip over. Deep grooves are unnecessary and are hard to clean. There are good inexpensive portable drain trays which allow you free counter space up to the edge of the sink for those times when the sink is not in use. This is particularly useful in small kitchens where counter space is at a premium.

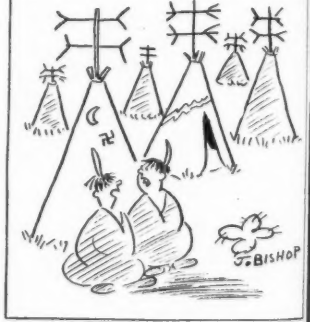
Some of the advantages of rinsing the dishes after you put them in the drainer are: (1) you can pour hot (200-212°) water from a teakettle onto the dishes, or you can pour or spray the automatically heated water (probably 130-145°) from the faucet; (2) although you have to turn glasses, cups, bowls, etc., upside down after you have rinsed them, you will use fewer motions than if you rinsed the dishes under running water or fished them out of a pan of hot water.

The disadvantage of rinsing after you put them in the drainer is that one drainer will not hold all of the dinner dishes used by a large family. However, if you had two or more drainers, you could let the first drainer-full dry while you loaded and rinsed the second drainer. You need something under the first drainer to catch the drip from the rinsed dishes. This could be a baking pan or a tray if you use your built-in drainboard for the second drainer. In case you do not have a built-in drainboard, you could lay a portable drainboard on the counter at the end of the sink so that the water can drain off.

You also need a mixing spout at the faucets so that you can turn on some cold water when the hot water is too hot for your hands.

Location of Fixtures

Most of today's cabinet and countersunk sinks have a built-in ledge at the rear of the bowl. You buy the deck type fixture which projects up from this ledge. Since the pipes which connect the mixing spout and the hose spray to the hot and cold water faucets are underneath the ledge, separate holes must be cut for the faucets, the spout, and the spray. Some of the sinks have the spray at the left of the hot-water faucet and others have it at the right of the cold-water faucet. You will find



"Next thing you know it'll be parking meters!"

it convenient if the spray is at the side where you rinse the dishes.

As a rule, the open end of the mixing spout is 10 to 11 inches above the bottom of the sink. You need a clearance of 11 inches for your pressure canner or a bucket. You cannot expect enough clearance for milking machine pails or 8-quart cream cans unless you have a double sink with a laundry bowl at one side.

The least expensive type of countersunk sink has no place for the fixtures. Usually the deck type fixture, with or without a spray, is installed on the work counter back of the sink; however, the wall-type could be installed on the wall above the sink. In either case the counter catches and holds the water which drips from your wet hands when you turn the faucets on and off. This collection of water seeps under the hard-surfaced counter top, which eventually causes curling and breaking. This dirty, soapy water also collects on the ledge of the other sinks, but does no harm because the ledge is of the same material as the sink.

A swinging spout extends out over the sink far enough for you to run water into a pan without having to tilt it. You are not so likely to hit dishes against the spout on these new sinks, because it is 2 to 3 inches farther away from you than it was on the old sinks.

Most of the mixing spouts have an aerator attachment at the open end to prevent splashing when the water is turned on full force. If you want to attach a hose to fill the washing machine at the sink, you remove the aerator and screw on an adaptor, which you can buy.

Freezer Tips

Save time and energy by squeezing lemon or lime juice and freezing in cubes. Use the cubes for iced tea, lemonade, pie, and any recipe calling for either lemon or lime juice. After squeezing, measure 2 tablespoons of the juice into plastic ice-cube trays and freeze. Remove frozen cubes from tray and drop them into a cellophane bag. Store in freezer.

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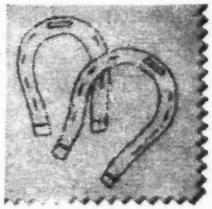

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Canning and Freezing Tips

Save Your Strawberries

Red ripe all over, sound, firm and slightly tart in flavor—that's the way to have strawberries for home freezing. Strawberries are among the fruits that freeze most successfully and are year-round family favorites.

Berries may be frozen whole in sugar sirup or as puree or juice, but for finest flavor the specialists recommend sliced or crushed berries, sweetened with sugar. Here's how to prepare sliced sugared berries:

After sorting berries to remove any that are green or imperfect, wash in cold water, a few at a time, lifting them gently out of the water to prevent bruising. Drain in a colander. Then remove hulls and slice into a bowl.

Sprinkle on sugar, allowing ¾ cup sugar to each quart (4 cups) of fruit. To draw out juice, turn fruit over several times with a large spoon. Use granulated sugar, either beet or cane, or ¼ corn sirup and ¾ granulated sugar.

Pack berries in moisture-vapor-proof containers. Rigid containers such as the square plastic boxes with press-on lids or glass freezer jars are easy to use. The berries will expand as they freeze, so ½ inch headspace should be left in pint containers, and 1 inch headspace in quarts. Be sure juice covers all the fruit. Press berries down with a spoon, if necessary, to let the juice rise.

Seal the container. Then label to show the date and also the type of product—for example: "Sliced sugared strawberries, June, 1952."

Freeze and store at zero F. or lower. If possible, turn the containers over a few times before the berries freeze solid, to keep the sugar from settling to the bottom.

To prepare strawberries for use in preserves, wash them in cold water, a few at a time. Next hull the berries, leaving them whole. If necessary, give them another quick rinse in a colander.

Strawberry Preserves

Use the smaller, less perfect berries for juice if you wish. Crush and cook for 3 minutes, stirring constantly. Strain. To each pound of choice prepared berries, allow ½ cup of this juice and 2 cups of sugar.

Add the sugar to the hot juice, stir, and continue to heat slowly until the sugar is completely dissolved. Drop the choice, whole, prepared berries into the sirup. Simmer for 3 to 5 minutes, then boil rapidly for 10 to 15 minutes, or until the fruit is somewhat clear. Remove the scum.

Allow the preserves to stand about 8 hours or overnight in a shallow glass or porcelain bowl. Next, fill hot sterilized jars three-fourths full with the drained berries. Boil sirup rapidly until fairly thick, or to 221° F. Pour hot sirup over

To prepare strawberries for freezing, Mrs. Edwin Deeke of Oakton, Illinois, selects medium-sized berries that have ripened on the plant. She discards the moldy, very seedy, and soft ones, then washes the berries in fresh running water and stems and trims them of any seedy or bruised portions. Berries may be frozen whole, but sliced berries have a better flavor and appearance.

Should you not be able to package strawberries as soon as they are picked, store them in the refrigerator.

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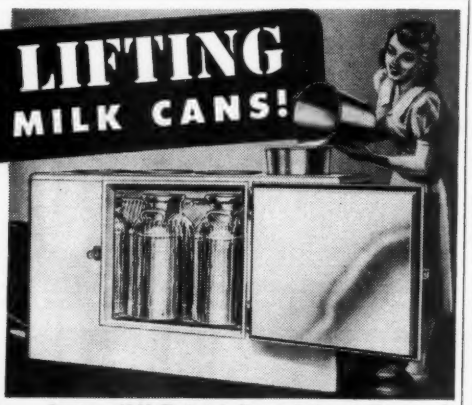

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the berries, leaving ½ inch headspace, seal and cool. Store in home freezer, locker, or in cool, dry, dark place.

By letting the preserves stand overnight, the berries "plump up" in the sirup. The strawberries absorb juice and won't float to the top when they are glassed. Using concentrated juice from crushed strawberries gives the preserves extra color and flavor.

If you want your strawberry preserves to go a long way, or if your supply of strawberries is limited, make combination jams with rhubarb or pineapple. The strawberry flavor will predominate.

Strawberry-Pineapple Jam

Slowly heat 1 pound of pineapple (cut into ½-inch cubes) with 2 cups of sugar, stirring until sugar is dissolved. Bring to a boil, cook 10 minutes, stirring constantly. Add 2 pounds of strawberries and 3 cups of sugar. Keep stirring and boil for 15 to 20 minutes, or until the jam is thick. Pour into hot sterilized jars and seal.

To make strawberry-rhubarb jam: cover 1 pound of young, tender rhubarb (cut into 1-inch pieces) with 1½ to 2 cups of sugar. Allow it to stand 1 to 2 hours. Crush 1 pound of strawberries, mix with 2 cups of sugar and add to the rhubarb. Heat slowly until sugar is dissolved, stirring all the time. Continue stirring and boil 15 to 20 minutes, or until jam is thick. Pour into hot sterilized jars and seal.

Quick Trick for Shelling Limas

Here's a trick for quick shelling of lima beans for freezing. The time required to get them out of their pods is the big handicap to their wider use for home freezing, says Eunice Kelly of the North Dakota Experiment Station—and she has been working to find a method for faster shelling.

Miss Kelly has found that if the pods are softened by preheating in boiling water, the beans may simply be squeezed out of the pod, washed, sorted, and packed for freezer storage. After tests with four varieties of limas grown in North Dakota, she reports good results after 6 months in frozen storage of limas prepared this way:

1. Wash freshly harvested lima beans in the pod in cold running water.
2. Scald in boiling water—small beans for 2½ minutes; large beans, 3 minutes; extra large beans, 4 minutes.
3. Cool in ice water and squeeze beans out of the pods.
4. Remove imperfect or overmature beans.
5. Wash in cold running water, drain, and package for freezer storage.

Miss Kelly reports that frozen lima beans preserved by this new method of preheating in pods scored high or higher in both color and flavor than those preheated after shelling.

Tender green lima beans are among the higher protein vegetables which could be used to supplement more expensive protein foods in the menu, says Miss Kelly.

Is Scalding Necessary?

Do vegetables need preheating before freezing if they'll be used soon?

Minnesota Experiment Station scientists received so many inquiries that they made tests of three vegetables which frequently mature all at once—asparagus, green beans, and corn. One lot of each vegetable was prepared by the recommended scalding. The other lot was frozen without preheating. Ears of corn were frozen husked and packaged, also in the husk. Freezing was done at 10°F. followed by storage at zero F.

All the vegetables frozen without preheating developed off-flavors within a month, but those scalded in advance showed

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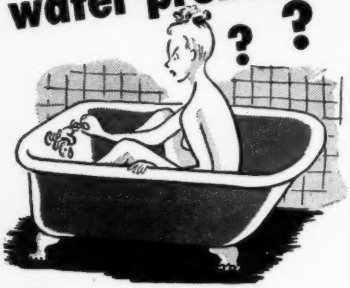

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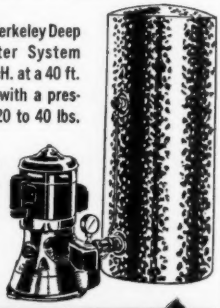

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little if any change. The unscalded green beans and asparagus lost their attractive color as well as their good flavor.

Unscalded asparagus developed an off-flavor in the first 24 hours. Unscalded green beans showed little change during freezing but deteriorated in storage so that they were unpalatable in 3 weeks, and inedible in 4 weeks. Corn in the husk was unpalatable by the time it was frozen and corn husked and packaged but not preheated changed flavor in 1 week.

The scientists concluded that scalding is a necessary step in preparing most vegetables for freezing, regardless of how long they are to be stored.

Sweeten Fruit Before Freezing

Most frozen fruits have better flavor and texture if packed in sugar or sirup than if unsweetened. Exceptions to this rule are rhubarb, gooseberries, currants, figs, and cranberries, which freeze as well without as with sweetening.

The best way to pack a fruit for freezing depends on how it will be used. Fruit packed in sirup generally is best served as is for dessert; fruit packed in dry sugar or unsweetened is better for pie or other cooking use because it is less liquid. Even

For fine flavor in crushed or sliced berries, sweeten them with sugar.

though most unsweetened fruit is not of highest quality when frozen, it may be packed this way for special diets.

The sirup recommended for most fruits is a 40 per cent sirup

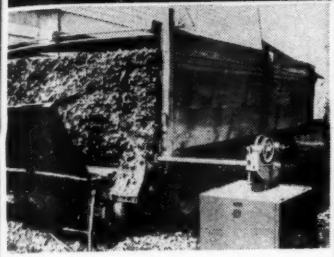
Patterned for You

4551—Such a pretty sun or housedress—stylish princess lines and flattering frills. Sew-easy, too. Sizes 12-20; 40. Size 18, 4¼ yards 35-inch fabric; ¾ yard contrast.

9163—Here's that useful wrapon in half sizes for the shorter, fuller figure. Easy to sew and easy to wear. Half sizes 14½, 16½, 18½, 20½, 22½, 24½. Size 18½ takes 3⅞ yards 35-inch fabric.

Send THIRTY CENTS (in coins) for each pattern to: ELECTRICITY ON THE FARM, 196, Pattern Department, 243 West 17th Street, New York 11, or in Canada, 60 Front St. W., Toronto.

Flinchbaugh
WAGON UNLOADER



Tested—Even though the Flinchbaugh is a pioneer and leader in the field it's constantly tested on all types of farms—all types of loads. It *must* stand up to its reputation—an inexpensive, heavy-duty unloader for both light and continuous heavy work!

Proven—Trouble-free inexpensive operation year after year has meant thousand upon thousand of satisfied customers all over the United States. Ask your farm equipment dealer for a Flinchbaugh—and buy the unloader with the famous canvas-saving, Non-spring Roller and Quick-aligning Portable Power Unit.

A FREE FOLDER is yours for the asking. Ask for folder No. 32.

THE Flinchbaugh COMPANY
EBERTS LANE, YORK, PA.

2-Way LIGHTNING PROTECTION

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Lightning never has destroyed any building fully protected by Security System. It guards against new perils of metal ducts, piping, etc. Uses most durable materials, all UL approved. Low points, neat, almost invisible.

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Green Guard Protective Capacitor is the only such device approved by both REA and Underwriters Laboratories, Inc. Holds lightning surges to *less* than line voltage, protects heaters, lamps, motors, etc. Send for full story. Security Mfg. & Contracting Co., Burlington 21, Wis.

SECURITY
LIGHTNING PROTECTION IN THE MODERN MANNER

— that is, 3 cups of sugar dissolved in 4 cups of water. For some mild-flavored fruits—such as pineapple wedges or cantaloupe balls—a less sweet sirup is better because it does not mask the delicate fruit flavor. In contrast, very sour fruits like sour cherries may need a sweeter sirup. Corn sirup may replace up to ¼ of the sugar in the sirup, if desired. An even larger proportion of corn sirup may be used if the newer, very bland, light-colored kind is chosen.

Honey also may be used to replace ¼ of the sugar in the sirup for freezing fruit, but only if the family likes its very definite flavor, which may mask the fruit flavor. The very light-colored, mild honey will change the natural fruit flavor less than the strong-flavored type.

For a dry sugar pack, simply cut fruit into a bowl, sprinkle on sugar as required for the fruit, then mix gently with a large spoon until the sugar dissolves in the juice from the fruit.

Granulated sugar, either beet or cane, may be used to make the sirup or to pack fruit in dry sugar.

Hang Clothes Correctly

If you hang all fabrics of each type together on the clothesline, you'll be able to take them down in the right order and save yourself a second sorting job to prepare the clothes for ironing.

Empty Your Steam Iron Promptly

Always empty your steam iron as soon as you finish ironing. Empty the iron while it is still hot so that the heat of the iron will help dry it out thoroughly.

If you want strawberry preserves that keep their peak color and flavor through the weeks and months to come, store them away in your freezer. Strawberry jams and preserves fade out and even lose some of their taste appeal when stored in the conventional way. If you plan to keep them in the freezer, put them up and seal them as usual but choose wide-mouth canning jars with flat lids for most convenient handling and stacking.

Dry your grain in storage

Get higher prices!

Now you can harvest in favorable weather, then remove excess moisture from your crops . . . in the bin! It's the tried, proved, low-cost method endorsed by governmental agencies and leading farm advisers. The cost of your ILG Crop-Drier Fan is often paid for by drying *one* crop! Phone our nearby Branch Office (consult classified directory), or send coupon now.

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for Junior Partners

HI—

Did you fix up that fire hose we talked about last month? If not, this would be a good time to do it. National Safety Week comes next month to remind us to follow safe practices all year round. And if there's one thing it's nice to be safe from, it's fire. So, do fix it up. Then take a few moments to dream. Dream about the future and what it can hold. Dream, as Mr. Gallagher suggests, that you're as big as your shadow. It's fun to dream, especially if, as in this case, you can make that dream come true.

Kenneth V. Anderson

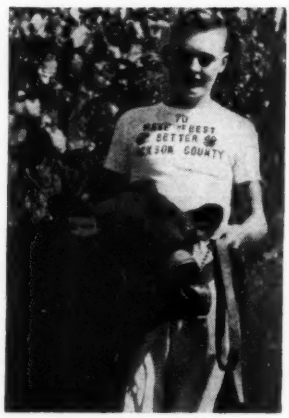
How to Be Bigger Than Your Shadow

By **H. J. GALLAGHER**†

This is a story of a farm boy and his shadow. It could be any farm boy, it may even have been you when you were a youngster. The cover picture was taken as the young chap paused on his way from the house to the barn. It may be he was playing that age-old game of making his shadow perform weird antics, or his imagination could be toying with the thoughts of the great things he could do if he were only as big as his shadow, the heroic feats he could perform that would rival those of Paul Bunyan or Jack the Giant Killer. It may be he was dreaming of the Herculean tasks he could perform about the farm, where with one flip of a powerful wrist he could clean up all of the chores, and in the handling of hay and grain and farm work, he would make his father and the hired man look like pygmies. Dream on, little man, there have been other dreamers who have had the same dreams—dreamers who were older, more experienced, and who were able to weave imagination into reality.

Young fellow, if you'll look around a bit, you'll find other shadows. Parallel, pencil-like shadows, not as big as yours. They're the shadows of your electric line. Maybe you never noticed them before. Move a bit so your shadow merges with them. Now you have the answer to your dreams. Strengthened by the magic energy of electricity, you have become bigger than your shadow, you have become a giant among giants, more powerful than any of the mythical characters of fiction.

The boy on the cover may have been one of thousands of 4-H Club boys who learned to control the might of electricity through their work in 4-H Club electrical projects—or he may have been Fredrick Henningsen of Route 7, Jackson, Michigan. Fred is now eighteen years of age and a 4-H Club scholarship student at Michigan State College. He is a native-born son of German immigrant parents and was raised on a 105 acre farm. Fred enrolled as a 4-H Club member at the age of twelve years and completed the following 4-H Club projects: Two years tractor, three years beef, four years crops, five years dairy, and five years electrical. In 1947, he was the state winner of the dairy production contest, and in 1949 won the highest state awards in the electrical projects contests which included the Westinghouse award and a trip to the International 4-H Club Congress in Chicago.



Fred Henningsen has always been at the top. Indicative of this is the steer with which he is shown and which he sold several years ago for well over five hundred dollars.

The cover boy may have been one of the eighty-five members of the Michigan Association of Future Farmers of America, who, since 1929, have won the American Farmer degree, the highest national degree awarded FFA members. Or, again, he may have been Lloyd Ruesink, Route 3, Adrian, Michigan. Llovd won the Star State Farmer degree in 1931, the highest degree awarded by the State Association of FFA. In 1932, he was awarded the American Farmer degree at the National FFA Convention in Kansas City, Missouri. After finishing high school, Lloyd completed two short courses at Michigan State College. He then returned to the farm where, with the help of electricity, he has cast an impressive shadow on farming operations and community affairs. He operates his own farm of 160 acres. He has a fine herd of fifty registered Holsteins and a flock of 1200 Hy-line hens. He is married and is the father of three sons and three daughters, ranging in age from six months to twelve years. The two older children are members of 4-H Clubs. Some of his many community activities include: Past President of the Michigan Junior Farm Bureau, director of the Michigan Farm Bureau for eight

†Mr. Gallagher is General Farm Service Supervisor, Consumers Power Company, Jackson, Michigan.

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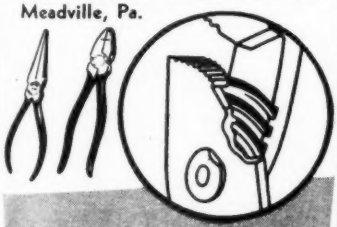

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years, director of the Farm Bureau Oil Cooperative, director of the Lenawee Soil Conservation District, and trustee in the West Adrian Congregational Church. Lloyd has his own airplane and is an active member of the Michigan Farmers' Flying Club.

Electricity is the Ideal Answer to Time and Labor Problems

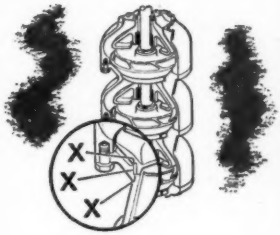
The operation of a dairy-poultry farm of fifty head of cattle and 1200 hens is an exacting 365 day job a year. It is the kind of operation that has a high measurement of time and labor. It requires a lot of hard work, work that must be supplied by either human energy or mechanical energy. "Human energy," says Mr. Ruesink, "can't be considered. In the first place, it isn't available; in the second place, it would be far too costly; and finally, it isn't dependable." Mr. Ruesink is a firm believer that electrical energy is the ideal answer to his time and labor problems. As to dependability—it is on the job twenty-four hours each day, including Sundays and holidays. Recently, Lloyd has rewired his farm buildings with a more adequate wiring system from a central pole distribution system. He wisely made this investment to enhance the value of his electric service.

Mrs. Ruesink is a former neighbor girl and high school classmate of Lloyd's. They were the two honor students of their class. Mrs. Ruesink later attended Adrian College on a scholarship award.

The Ruesink home is a very fine old home constructed during Civil War years, but has been completely modernized with a full bathroom on the first floor and powder room on the second floor. A modern kitchen is equipped with an electric range, refrigerator, two large deep freezers and numerous small appliances. A 50 gallon domestic electric water heater supplies the hot water requirements of the family. They also have a washer, an ironer and an electric ice cream freezer, which their oldest son built as a 4-H project.

The dairy is equipped with

little details like the XXX seal...



make Johnston Pumps better!

Johnston pump bowl assemblies fitted with enclosed impellers have the Johnston XXX Seal—just another small detail that makes each Johnston the pump with real inside qualities. The design of the Johnston Seal, formed by the impeller shroud and the wear ring, provides sealing surfaces which prevent *any loss of efficiency* caused by liquid by-passing.

The extra hardness of the renewable aluminum bronze wear ring over standard bronze construction gives added protection, longer life and higher *sustained* pump efficiency. This is just one of the many little inside quality features that make each Johnston Pump better.

Every Johnston Pump is engineered for the specific duty for which it is intended. Trained hydraulic engineers are available at your nearest Johnston Dealer or at the Johnston factory to furnish detailed information, proposals and anything else necessary to meet your particular pumping equipment needs. Compare the inside qualities of Johnston Pumps and you'll never buy any other!!!

Sizes from 4 to 32 inches; single- or multi-stage; 2 to 1000 H.P.; capacities to 10,000 G.P.M.; lifts to 1000 feet; for liquid temperatures to 400° F.

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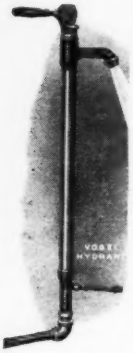

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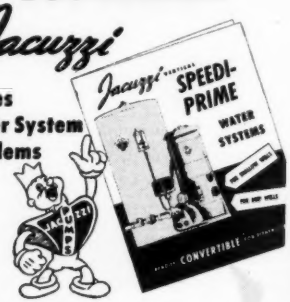

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Lloyd Ruesink shown with his family. Lloyd is active in all community affairs and is a member of the Michigan Farmers' Flying Club. The tip of his plane wing can be seen in the upper right hand corner.

an electric milker, milk cooler, dairy water heater, two electrically heated drinking cups supply stock in the barnyard. Mr. Ruesink lights his laying flock at night for increased egg production. He uses an electric elevator for handling small grains and ear corn and also has a fanning mill. The farm shop is equipped with a farm welder, tool grinder and electric drill.

The story of the "Boy and His Shadow" is a story of our American way of life. In no other country could Frederick Henningsen, the son of immigrant parents, have attained such stature in youthful leadership, nor could a young man like Lloyd Ruesink have exercised such freedom in carving his own niche in agriculture. Under our American system of free enterprise, the only limit to individual initiative is the individuals abilities and ambitions—and the intestinal fortitude to make ability and ambition serve a good purpose.

The shadow of the cover boy points to the east, the horizon of new days—the horizon of new hopes and youthful ambitions—the greatest heritage of America.

Hair-Cuts For Hedges

By GEORGE HARRISON

You may have some hedges to take care of and an electric hedge-trimmer makes it a simple task. Marshall Stuck of La Crosse, Indiana, made his clipper more effective by attaching a sheet of thin steel to the blade-supporting bar. This steel sheet serves as a brush since it throws the clippings forward continually putting them on the ground. "Before I made that attachment," said Stuck, "the clippings stayed on top of the hedge until I brushed them off by hand."

You may wish to modify your hedge-trimmer in the same way. You can see from the job that Mr. Stuck is doing that it works very well.

One out of every twenty-five families in the United States derives its livelihood from the dairy industry.

It's a fast, easy, one man job with a Booms
All-Purpose Wagon Unloader
Handles all field and vegetable crops
Unloads 5 tons in 7 minutes

Peace of mind is yours at harvest time with a speedy, low-cost Booms wagon unloader. Here's why. It lets one man do the work of three . . . teams perfectly with an all-crop harvester . . . will not tip, lift or turn over . . . installs on any flat-bed wagon. This all-purpose, controlled-speed machine has been time-tested and performance-proved on thousands of farms everywhere. See your dealer, or write direct for a factual, illustrated folder.

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FOOD FREEZERS

The Family's Preference For Faster Freezing and Safe Storage Of More Frozen Food at Home!

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Electricity Is Kind

By JAY ABBE†

One of the kindest uses of electricity on our farm has been when a mother duck was sitting on eggs. One night a skunk killed her and we buried her but forgot the eggs she was sitting on until we remembered a day later when they were cold. Soon as we got the eggs, we put them under a heat pad so they would hatch out.

We waited about four weeks and every once in a while we took the heat pad off so that the eggs would not get too hot. If the eggs did get too hot, they would die. At last, they hatched. We took care of them until they could take care of themselves.

If it had not been for electricity and the heat pad, we could not have had the ducks.

Jay Abbe's prize check was presented by Joseph S. Webb, Agricultural Engineer, Philadelphia Electric Company.

†Master Abbe, age 11 yrs., lives on his father's 122 acre farm in Newtown, Bucks County, Pennsylvania. He is a student at the Friends' School in Newtown. His very interesting story has won a prize in a contest sponsored by the Philadelphia Electric Company for stories on how electricity helped on the farm and in the home. The heating pad was placed over ten duck eggs and one goose egg. All of the duck eggs hatched. Although the goose did not survive the ordeal, the ducks could be heard quacking for some time before they actually came out of the shell.

MASTITIS IN COW CAUSES STREP THROAT INFECTION

Mr. Clarence Schroeder

"My husband had strep sore throat and couldn't get rid of it. Our veterinarian treated our cow for mastitis and advised my husband to stop drinking her milk. His sore throat left. We bought pasteurized milk until we got our Home-Health Pasteurizer —now we know our milk is safe."
Mrs. Clarence Schroeder, Farhamville, Iowa

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Can't boil milk or cause "cooked taste." Pasteurizes a gallon at a time. No need to check temperatures or watch the clock. No stirring necessary. Laboratory tested and guaranteed. Accepted for advertising by American Medical Ass'n. Ask your dealer or mail coupon.

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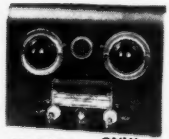

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HOL-DEM delivers the wallop in *all* soil and weather conditions. "Weed Kutter" feature kills weeds on contact! 5 Year guarantee—satisfaction or your money back. See HOL-DEM before you risk your stock on makeshift fencers. Write for information. DEALERS WANTED
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Questions and Answers

Motor For Hammer Mill

▶ **Question:** *We have a McCormick Deering Number One Hammer Mill. Can this be operated by a 5 HP electric motor?*

R. W., New York

▶ **Answer:** Yes, a 5 HP electric motor will run your mill. Arrange the feed to the mill so it is as nearly constant as possible. Drive the mill at approximately 1900 RPM.

Stand-by Generator Size

▶ **Question:** *Stand-by generating units are advertised anywhere from 500 to 5,000 watts. How should I determine the size I should get for emergency service?*

F. L. G., Massachusetts

▶ **Answer:** The farm department of your power supplier can help you determine the size of equipment you need. You should make a list of the equipment you wish to be able to operate in the order of its importance. Beside each piece of equipment, write down its rating in watts. Then check those pieces of equipment that must be used simultaneously. The total wattage of those units that must be used at the same time, or the largest single piece of equipment which must be supplied, will determine the size unit needed. It should be equivalent to the larger of the two figures.

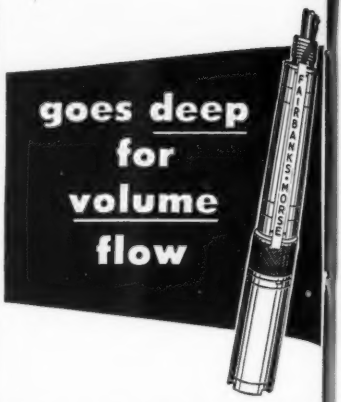
In making provisions for stand-by generation equipment it is imperative that a double pole double throw switch be used to disconnect the power company's service entrance from your system before it can feed current from your stand-by generator to the equipment in your home or on your farm. Check this with your power supplier to be sure that there is no possibility of error.

Soil Sterilizer

▶ **Question:** *I have been told that I can use electricity to kill weed seeds in the garden before planting. Can you tell me what kind of a hookup I would need?*

C. D., Montana

▶ **Answer:** Electric sterilization of soil consists of heating it in batches to the point where seeds are killed. Such sterilizing equipment is used in places like greenhouses for preparing seed-bed soil but it would not be particularly well adapted for use in a garden plot. You can



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THE SHAVER THAT SHAVES ANY BEARD

Whisker's clipper-type .002" thin blade shaves any length beard, even to 7 days' growth, without pulling or stalling. 110v AC model; no TV or radio interference! See your barber or dealer. If he cannot supply you, send $15.95—we pay postage; or send $2, you pay balance plus postage and C.O.D. 10-day money-back guarantee.

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Cuts hair, removes superfluous hair from legs and under arms. The same fine quality clipper used and sold in many beauty shops. See your shop, or dealer. If you prefer, send $10.95—we pay postage; or $2, you pay postman balance, postage and C.O.D.

Electro Tool Corp., Dept. W462-F, Racine, Wis.

probably obtain the best weed control with chemical sprays. You can get information on the subject from your State Extension Service.

Are Your Motors Under Control?

. . . . . (Here from page 15)

switch instead of a pushbutton.

No source of power on the farm is as flexible or as easily controlled as the electric motor. Thus if you are to save time by having the equipment operate when it is needed and whether or not you are present, then control is the answer. Manually operated control incorporating a means of safely connecting the motor to or removing it from the line plus full protection from overload, is available in sizes so as to handle all motors up through 3 HP, 230 volt, single phase. Magnetic control for closing the contacts, is available for protecting all sizes of single phase electric motors. This magnetically operated control incorporates in addition to all the features of the manual control, the feature of being automatic in operation as well as permitting the control of the motor from a position remote from the control of the motor.

Many manufacturers make these types of electric motor controls and it is only a question of knowing how you want to control the motor in order to pick the control which will adequately perform the function required. Since motors are so easily controlled and can be made automatic in their operation, much more thought and attention should be given to the labor saving features of remote or automatic operation of electric motors.

If electric motors are to operate safely, efficiently and often automatically and do so without damage to them, then a suitable control should be installed. It is as essential a part of the electric motor installation as the wires which connect the motor to the electric circuit.

Your power supplier or your electrical dealer can guide you regarding protection and control of your electric motors.

—I'm proud I am a farmer!—

Crimps Grain For Better Feeding

James Hatcher, Bonner Springs, Kansas, feeds about 300 head of cattle and 125 hogs every year. He finds that crimped grain is more easily digested . . . helps add weight faster. He uses this modern, low-power-consuming Davis-Built Krimper-Kracker driven by a 2 H.P. motor. Complete range of sizes available; capacities up to 14,000 lbs. hourly.

Attention Farm Equipment Dealers: Choice franchises available. Make steady profits with proven "Davis-Built" line. Write at once.

H. C. DAVIS SONS
Dept. EB-6 Bonner Springs, Kans.

Strataflo TRADE MARK REG.

FREEZE PROOF HYDRANT

YEAR 'ROUND OUTDOOR WATER SERVICE

Running water for stock all winter. Shut-off valve is below frost line. Hydrant drains automatically. Easy to install . . . lasts a lifetime.

PLEASE TELL US MORE!

STRATAFLO PRODUCTS, INC., Fort Wayne 1, Ind.

Please send Bulletin No. 901 on Strataflo Non-Freezing ☐ Yard Hydrants; ☐ Wall Hydrants.

NAME

CITY

COUNTY STATE

SAVE TIME AND LABOR

What Would You Say?

CONTEST

Here is a contest the whole family can enjoy. Cash Prizes will be awarded for the best suggestion for a fourth line to complete the verse at the bottom of this page. Lots of fun and you may win $25 cash.

RULES—JUNE-JULY CONTEST

Seven cash prizes will be awarded for the best last line to complete the verse in the coupon below. Your suggestion should rhyme with the second line.

The first prize will be $25 cash; the second prize $10. In addition, five consolation prizes of $3 each will be awarded for the best line furnished.

In case of a tie, each winning contestant will receive the full cash prize to which he or she is entitled.

All members of the farm family to whom this magazine was sent may enter but each contestant may submit only one line.

Question "A" must be answered.

Entries must be sent to the Contest Editor, ELECTRICITY ON THE FARM Magazine, 8 So. Dearborn Street, Chicago 3, Ill. before July 15.

The decision of the judges is final and all entries become the property of ELECTRICITY ON THE FARM Magazine.

Winning names and entries will be announced in the October 1952 issue.

Send your entry on the coupon or make out a similar form on a plain sheet of paper or government postcard.

With Electric Fans we'll live with ease
While summer heat prevails,
We'll be assured of a steady breeze

? ? ? ? ? ?

My suggestion for a fourth line to the above verse is:

.....

(A) What new electrical farm equipment and home appliances have your family obtained in the last three years? (Identify by brand name.)

.....

.....

.....

My name is.....

R.F.D.....Post Office.....

County.....State.....

Awards for March Contest

An electric water heater
Is as safe as it can be
Put one in the dairy

? ? ? ? ?

The Winning Fourth Lines

FIRST PRIZE—$25 CASH

"Get Grade 'A' instead of 'C'."
Mrs. W. L. Patterson
R.F.D. 2, Jackson Center, Pa.

SECOND PRIZE—$10 CASH

"Clear the kitchen of debris."
Mrs. Mearl Coleman
Box 284, Portville, N. Y.

Five Consolation Prizes—$3 Each

"Saving choretime energy."
Mrs. Ruth Baker
R.F.D. 1, Carleton, Mich.

"End trudge and drudgery."
Mrs. George Bertrand
Box 50, Mountain Top, Pa.

"Keep it clean-efficiently."
Mrs. C. Koenekoop
R.F.D. 1, Sinking Spring, Pa.

"For quick clean-up efficiency."
Mrs. Eric Schulz
Edmund, Wisconsin

"It's your hygiene guarantee."
Mrs. Glenn Swift
R.F.D. 1, Falmouth, Ind.

Honorable Mention

Jerrold Buckley, Kensett, Iowa, Miss Mary Jane Curtis, Liberty Center RFD 1, Indiana, Mrs. Harvey T. Garr, RFD 2, Pinckney, Mich., Joe Imke, RFD 2, Follett, Texas, Mrs. Nancy Klingelhofer, Randallstown, Md., Ronald Lloyd, RR 2, Franklin, Indiana, W. E. Miller, Sr., Logan, Kansas, Mrs. S. H. Pruitt, RFD 6, Oglethorpe, Ga., Miss Hilda Richardson, RFD 1, Harris, Mo., Ed Robotka, RFD 2, Franksville, Wisc., Mrs. Ernest Thayer, Jr. Salisbury, Mass., Miss Hazel Triou, RFD 2, Macedon, N. Y., Mrs. Bernard Wright, Cummings, No. Dakota, Mrs. Ina Perkins, RFD 1, Anaconda, Montana, Donald Recker, RFD 1, Faribault, Minn.

ONLY the NEW Sunbeam MIXMASTER

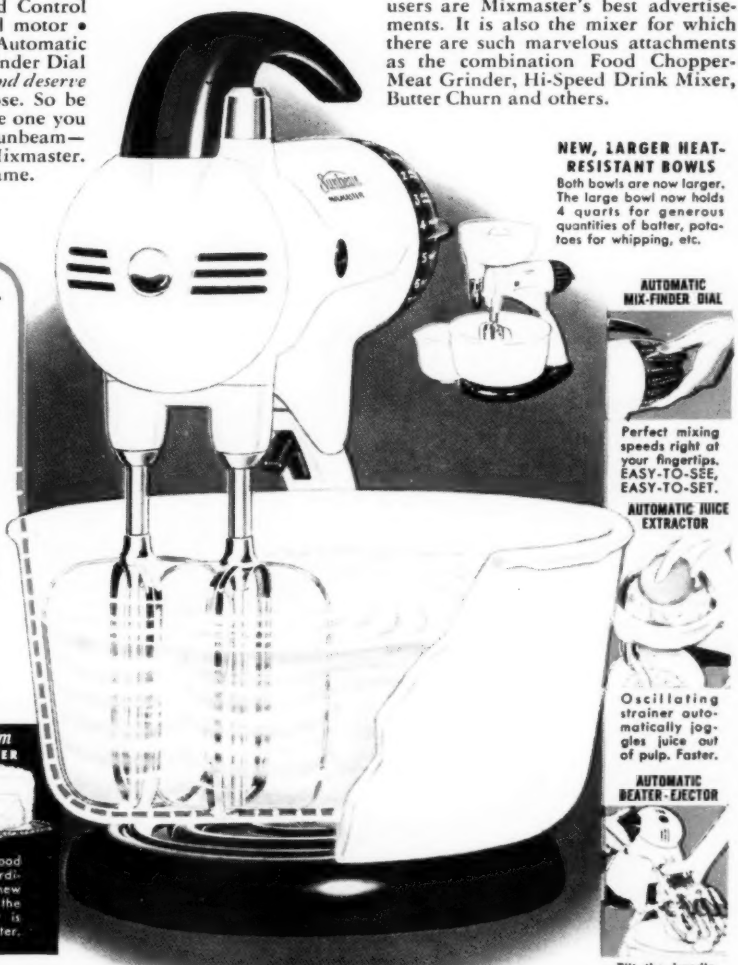
MODEL 10 AUTOMATIC

REG. U. S. PAT. OFF.

gives you all these advantages

Mixmaster's new larger Bowl-fit beaters • Automatic Bowl-Speed Control • new powerful EVEN-speed motor • Automatic Beater Ejector • Automatic Juicer and the famous Mix-Finder Dial are the advantages *you want and deserve* in the food mixer you choose. So be sure the mixer you get (or the one you receive as a gift) is the NEW Sunbeam—the original and the ONLY Mixmaster. There's only ONE by that name.

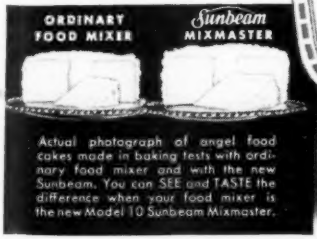
Nearly seven million enthusiastic users are Mixmaster's best advertisements. It is also the mixer for which there are such marvelous attachments as the combination Food Chopper-Meat Grinder, Hi-Speed Drink Mixer, Butter Churn and others.



LIGHTER...HIGHER... FINER-TEXTURED CAKES!

More *EVEN* mixing and greater AERATION with these NEW, LARGER BOWL-FIT BEATERS

You get more EVEN mixing and greater AERATION. All the batter is carried into and through the beaters. The larger outside beater is curved to fit the contour of the bowl all the way to the bottom. The larger inside beater is shaped to cover the flat bottom surface all the way to the center. The bowls revolve automatically leaving hands FREE to add ingredients.



Actual photograph of angel food cakes made in baking tests with ordinary food mixer and with the new Sunbeam. You can SEE and TASTE the difference when your food mixer is the new Model 10 Sunbeam Mixmaster.

NEW, LARGER HEAT-RESISTANT BOWLS
Both bowls are now larger. The large bowl now holds 4 quarts for generous quantities of batter, potatoes for whipping, etc.

AUTOMATIC MIX-FINDER DIAL

Perfect mixing speeds right at your fingertips. EASY-TO-SEE, EASY-TO-SET.

AUTOMATIC JUICE EXTRACTOR

Oscillating strainer automatically jiggles juice out of pulp. Faster.

AUTOMATIC BEATER-EJECTOR

Tilt the handle —out drop Bowl-fit beaters individually, for easier cleaning.

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Famous for Sunbeam TOASTER, IRONMASTER, COFFEEMASTER, SHAVEMASTER, etc.

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PAID
Dayton, Ohio
Permit No. 213

POSTMASTER:—If undeliverable send Form 3547. Include Stencil number. Postage is guaranteed.
ELECTRICITY ON THE FARM
24 W. 40th St., New York 18, N.Y.

Electric Refrigeration
SAFEGUARDS FARM PROFITS

MILK COOLING

The ELECTRIC MILK COOLER cools and provides proper storage temperature, preventing rapid multiplication of bacteria and safeguarding milk quality. It is a "must" for producing Grade A milk, and it's faster and cheaper than any other method . . . automatic, too! Ask any dairy farmer what he'd take for his electric milk cooler . . . you'll find out in a hurry how highly he values it!

STORAGE SPACE

Eggs, fruit, meat, milk, vegetables and poultry can be preserved in "walk-in" type produce coolers. Thousands of farmers now use electricity this way to get safe, profit-assuring storage.

HOME FREEZING

Every modern farm is finding the freezer a "must" because it permits the preservation and long storage of fresh foods. It preserves their full flavor, appearance and food value and provides a quicker, easier and more economical method of food preservation. Meats, poultry, fruits, vegetables and many cooked foods are being frozen on thousands of farms today, with time and money-saving results.

. . . AND IN THE FARM KITCHEN—AN *Electric* REFRIGERATOR, *of course!*

OKLAHOMA GAS AND ELECTRIC COMPANY

An Oklahoma Institution • Established, Oklahoma Territory, 1902